Air Resources Board

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Linda S. Adams
Secretary for Environmental Protection

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TO: Linda Irokawa-Otani
Office of Legislation and Regulations
Department of Pesticide Regulation

THROUGH: Fereidun Feizollahi, Manager
Economic Studies Section
Research Division

FROM: Stephen Storelli
Economic Studies Section
Research Division

DATE: September 20, 2007

SUBJECT: CONSULTATION ON RE-DRAFTED REGULATIONS ON FUMIGANTS

The Agency-wide Economic Analysis Unit was requested to assist staff of the Department of Pesticide Regulation (DPR) with the economic impact assessment for a proposed redraft of the regulation pertaining to fumigants.

On April 18, 2007 the Air Resources Board (ARB) provided DPR with an analysis of the proposed fumigant regulations (Attachment 1). The result of that analysis found that the total cost to growers is between $10 million to $120 million per year.

This analysis will address the proposed DPR fumigant regulatory changes as discussed in DPR's Pre-Decisional Document (9-5-07).

The proposed cost changes to the regulation focused on Sections 6452.1, 6452.2, and 6452.4. Cost adjustments to the original ARB April 18, 2007 analyses are as follows:

Section 6452.1 – This changed the responsibility to DPR (from the registrant who distributes the fumigants to the growers) to register and track the fumigants. Cost adjustment – remove tracking and reporting cost – $900,000 per year.

Section 6452.2 – According to DPR the new regulation regulates users (the old regulations regulated manufacturers). The net affect of the regulation is to reduce the acreage taken out of production in Ventura County. DPR used a different method to estimate the reduction in Ventura County acreage.

DPR estimated the impacts on acreage reduction in Ventura County as follows: For 2004 they calculated an upper bound for acreage removed and a lower bound for acreage removed based on field methods used to apply the fumigant. DPR's methodology was to estimate a **mean pounds fumigant emissions per treated acre** (107.1 pounds) and a **required total emission reduction** (in pounds) (799,710 pounds). Total pounds of required emission reduction divided by mean pounds fumigant emissions per treated acre equals the acres that must be taken out of production (7,465 acres, upper bound; 5,758 acres, lower bound).

According to the ARB April 18 analysis, the cultivation loss from not growing strawberries in Ventura County is $8,329 per acre in 2006 dollars. For the entire county the loss is between $48 - $62 million per year.

Section 6452.4 Requirement for permittee to submit emission allowance request to the commissioner (one request per field per year). DPR estimates there are 15,000 fields in California and the time to complete the request will be about 15 minutes (one quarter page in length). Cost: $10.00 per hour times 0.3 = $3.00 per request times 15,000 request = $45,000 (negligible).

Cost Summary

(As a reminder, the original April 18 analysis contained a cost estimate for conversion to low-VOC methods of fumigant applications of about $10 - $40 million per year. The re-drafted regulations did not impact this cost.)

DPR's adjustment to the method to estimate acreage loss creates, by far, the largest reduction in costs (when compared to the ARB April 18 analysis).

The total cost of the proposed changes can be bounded.

Lower Bound

- If growers were to apply fumigants using low emission methods the total cost will be between $10 million to $88 million per year. ($10 – ($40 + $48) = $88).

Upper Bound

- If growers do not use the low emission methods, cost will be between $10 million and $102 million per year. ($10 – ($40 + $62) = $102).

(The original ARB April 18 analysis shows cost $10 million to $120 million per year).

If you have any questions regarding this assessment, please contact Steve Storelli at (916) 324-0595 or sstorell@arb.ca.gov or Fereidun Feizollahi at (916) 323-1509 or ffeizoll@arb.ca.gov.

Attachment

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X:\!Final Letters and Memos\Memo to Linda Irokawa-Otani - Storelli 092007.doc

Air Resources Board

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TO: Linda Irokawa-Otani
Office of Legislation and Regulations
Department of Pesticide Regulation

THROUGH: Fereidun Feizollahi, Manager
Economic Studies Section

FROM: Bill Dean
Economic Studies Section

DATE: April 18, 2007

SUBJECT: CONSULTATION ON DRAFT REGULATIONS ON FUMIGANTS

The Agency-wide Economic Analysis Unit (AEAU) was requested to assist staff of the Department of Pesticide Regulation (DPR) with the economic impact assessment for a proposed regulation.

DPR proposes to amend section 6000 of California Code of Regulations (3 CCR). The pesticide regulatory program activities that will be impacted by the proposal are application of fumigants.

The proposed regulation focuses on volatile organic compound (VOC) reductions by banning some application methods, which require tracking and reporting of fumigant use, and by imposing emission limits in ozone nonattainment areas. The regulation also imposes licensing requirements on qualified applicators. AEAU staff estimate that the total cost to growers is around $10 million to $120 million per year.

ANALYSIS

Application methods

The proposed regulation bans methods of fumigant application that result in high emissions of VOCs. In many cases the methods to be eliminated are ones currently favored by growers, who will have to rely on more expensive methods under the new regulation. DPR provided an analysis that estimates this cost to growers at about $10 million to $40 million per year, depending on what proportion will have to rent sprinklers or use tarpaulins. See Table 1.

Table 1. Cost of Conversion to Low-VOC Methods of Fumigant Application

Fumigant application method	Cost ($million)
Post-application water treatments (sprinkler system already in place)	1.4
Post-application water treatments (including rental of sprinkler system)	32.5
Tarping – methyl bromide	8.1
TOTAL, if all fields have sprinkler system already in place or tarpaulins	9.5
TOTAL, if all fields have growers rent sprinkler system or tarpaulins	40.7

Source: DPR

Tracking and reporting

The proposed regulation also requires tracking of fumigation use by the registrant who distributes the fumigants to the growers. This requirement applies within Sacramento Metro, San Joaquin Valley, South Coast, Southeast Desert, and Ventura ozone nonattainment areas. DPR estimates this cost at $0.05 per pound of fumigant, for a total of $900,000 per year.

Emission limits

The emission limits reduce the amount of fumigant available to growers. Fortunately, in most of the nonattainment areas, growers can beat the emission limits by switching to low-VOC application methods, as discussed above. According to DPR analysis, the only area in which growers have to leave some fields untreated is Ventura County, home of many strawberry growers. The actual 2004 VOC emission from fumigants in Ventura County was 4.616 tons per day. If growers were to use low-VOC application methods as specified by the proposed regulation, their emission would have been 3.861 tons per day. The emission limit for Ventura County is 2.633 tons per day, so it will be a binding constraint. For 2004, it would imply a 32 percent reduction in acreage fumigated. According to DPR, Ventura County reported 30,231 acres fumigated in 2004. Therefore, under the proposed regulation, about 10,000 acres would have to go without fumigation.

Growers have several options regarding land unavailable for fumigation due to emission limits. They can to leave the land uncultivated and not grow crop there, for loss L_C. However, they will probably switch to organic strawberries or to some other crop that does not require fumigation, so L_C overstates the loss. Each grower faces different costs so that is why they do not all choose the same option.[1]

[1] Steve Fennimore, Extension Vegetable Week Specialist, UC Davis, private communication.

Revenue *R* is the per-acre yield multiplied by the price, both of which the California Department of Food and Agriculture provide.[2] For strawberries, the typical revenue is $42,612 (2006 dollars) per acre.

The UC Davis Department of Agricultural and Resource Economics provides crop-specific Cost and Return Studies.[3] We use the total cost per acre *C* rather than the operating cost per acre. Since the county-wide reduction is about a third of the acreage, it is more likely that some growers would give up on fumigation entirely rather than most growers cutting back by a third. For Ventura County, the typical total cost to grow strawberries is $31,824 in 2004, which equates to $34,283 in 2006. The portion of the cost due to fumigation is $1,803 in 2004, which equates to $1,942 in 2006.

The cultivation loss is given by

$$L_C = R - C = 42{,}612 - 34{,}283 = 8{,}329$$

in 2006 dollars per acre. For the entire county, the loss is around $80 million.

This result, $80 million, is almost certainly too high. For one thing, the analysis assumed that all the emission reduction fell on growers of strawberries. This is a high-value crop. If other crops requiring fumigation are grown in Ventura County, they would bear the brunt of emission reduction, for a much lower loss per acre. Also, the growers that stop growing strawberries would be able to grow some other crop that does not require fumigation, avoiding a total loss. For some growers, the price premium on organic strawberries can compensate for the reduced yield and extra labor cost. Therefore, the loss due to the emission limit is highly uncertain, somewhere between $0 and $80 million.

License requirement

The license requirement is likely to result in some growers hiring licensed contractors to perform fumigation, instead of the growers using their own unlicensed employees to do so. This is a cost increase to growers, but is small compared to the other costs described above.

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[2] CDFA, California Agricultural Resource Directory 2005.
[3] Online at http://coststudies.ucdavis.edu/.

CONCLUSION ABOUT COSTS

The biggest cost is caused by losses in crop production due to the emission limit in Ventura County, up to $80 million per year. The other big cost is due to conversion to low-VOC methods of fumigant applications, around $10 million to $40 million per year.

All other aspects of the proposed regulation add about $1 million per year to the cost, which is small compared to the uncertainty in the other components of the cost.

The cost due to the proposed regulation is about $10 million to $120 million per year.

If you have any questions regarding this assessment, please contact Bill Dean at (916) 323-1532 or wdean@arb.ca.gov or Fereidun Feizollahi at (916) 323-1509 or ffeizoll@arb.ca.gov.